

PRIOR STATEMENTS ADDRESSING THE QUESTION OF THE MAGNITUDE OF THE PROBLEMS FACED AFTER THE JULY AND AUGUST 1999 OUTAGES¹

Here is what Liberty Said in 2000:

1. Funding for T&D was inadequate during most of the 1990s. (First Report, Page I-5)
2. ComEd did not track the age and loading conditions so as to know the end of life for key distribution system components such as cables (First Report, Page I-5)
3. ComEd did not adequately upgrade, reinforce, or replace aging components in its distribution system. (First Report, Page I-5)
4. ComEd had a very large backlog of corrective maintenance items and allowed the general condition of the distribution system to deteriorate. (First Report, Page I-5)
5. It is likely that a root cause of many of the service interruptions experienced by ComEd's customers in recent years relates to less than adequate funding of T&D activities during the 1990s. ComEd should not permit future cost control efforts to inhibit identified repairs and enhancements planned for its T&D systems. (First Report, Page III-18)
6. ComEd's inspection, maintenance and repair practices to distribution lines were not performed adequately to minimize customer outages and were not consistent with good utility practices. (First Report, Page IX-20)

Here is what ComEd said internally at the time of the events and actions in question (Transformation Work Plan cites are quotes, cites to ComEd's audit data requests are not)

1. "Customers were not only without power during one of the longest heat waves on record, they were unwitting victims of a **monumental comedy of errors**." (Transformation Work Plan Introduction – 1)
2. "**This reliability crisis**, underscored by the breakdowns during Summer 1999, was just the most recent in a long string of crises dating back to the mid-1960s. The **physical infrastructure**, however, was not the only aspect of the organization that was **suffering from neglect**." (Transformation Work Plan Introduction – 1)
3. "In essence, Summer 1999 constituted a "**do-or-die**" wake-up call." (Transformation Work Plan Introduction – 1)
4. "The challenge from Summer 1999 must be to ensure the call to action is heeded, and the **pattern of corporate ineffectiveness is finally interrupted**." (Transformation Work Plan Introduction – 2)

¹ All shading has been added by The Liberty Consulting Group.

5. “Understanding ComEd’s historical foundation helps to explain the origin of the loss of trust and the presence of other unacceptable cultural norms or behaviors. The following brief perspective from the past demonstrates how the current culture at ComEd continues to recycle through crisis after crisis.” (Transformation Work Plan Introduction – 5)
6. “Before the summer was over, seven ComEd executives were asked to resign in an unprecedented move that acknowledged delivery performance was fundamentally out-of-step with the expectations of constituents.” (Transformation Work Plan Where We Are – 5)
7. “It was painfully obvious that the company could not deliver reliable service and that customers did not believe in ComEd nor trust anything the company did. In fact, customers considered ComEd to be incompetent. Employees felt as bad or worse about the company. The internal perception of ComEd plummeted. Many would say ComEd was lucky to have made it this long without a disaster. Unfortunately, the bitter reality of the system’s deterioration and weaknesses had now become common knowledge.” (Transformation Work Plan Where We Are – 5)
8. “ComEd is in the midst of a Turnaround effort to remedy the reliability crisis. The massive reaction to this crisis is designed to resolve critical issues and salvage damaged relationships with key constituents.” (Transformation Work Plan Introduction -2)
9. “ComEd quickly responded to resolve this latest crisis. Over the next six weeks, ComEd dedicated an estimated 250,000 additional man-hours and over \$20 million above and beyond normal operations to the effort. (Transformation Work Plan Where We Are – 6)
10. “In addition to the above investment, ComEd has poured hundreds of millions of dollars into addressing reliability concerns by improving the physical system.” (Transformation Work Plan Where We Are – 6)
11. “As the grossly expanded spending pattern surrounding the Settlement Agreement and external commitments made during 1998 and 1999 comes to a close, the pressure to reduce expenditures will intensify.” (Transformation Work Plan Where We Are - 26)
12. “Within weeks of the August 1999 outages (in fact by the end of the month), ComEd had already spent more than \$10 million on T&D improvements and was well on its way to a two-year, \$1.5 billion investment. These improvements included massive expenditures on the physical infrastructure upgrades, system optimization, load and capacity enhancements and equipment protection and monitoring. (This work is summarized in the most recent Quarterly Report to the ICC and the City of Chicago.)” (Transformation Work Plan Where We Are - 39)
13. “Overall, the above efforts have translated into hundreds of specific initiatives and thousands of individual work tasks – most of which were to be completed by Summer 2000, and all of

which were to be completed over the next two years.” (Transformation Work Plan Where We Are - 41)

14. “Experts have declared the ComEd program to be the most ambitious system improvement effort ever attempted by a public utility in the United States.” (Transformation Work Plan Where We Are - 41)

15. “These changes represent major steps in ensuring the physical distribution system is capable of delivering with a basic level of consistency and confidence that customers need to maintain a positive relationship with ComEd. The decision to ‘hold nothing back’ has established the foundation of a new relationship with those on the outside. While this progress is encouraging, the imperative to dramatically strengthen the physical system remains a critical focus.” (Transformation Work Plan Where We Are - 42)

Here is what ComEd said publicly at the time:

1. “The Report also details the recent improvements achieved through round-the-clock inspection, repair, and replacement activities, and offers a comprehensive blueprint and a definite timetable for the steps necessary to ensure that ComEd’ service meets or exceed industry standards in the performance it delivers to its customers.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)\
2. ComEd will also announce later today a plan calling for a “two-year recovery program”, aimed at bringing service reliability up to or beyond industry norms. As elements in the prioritized action plan, ComEd pledges accelerated and ongoing efforts to address the specific problems identified by the investigation.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)
3. ComEd has already launched a 24 hour/7days a week campaign to repair, replace, or upgrade major equipment, such as transmission lines, substations, feeder cables, and other components. All told, during the past six weeks, ComEd devoted an estimated 250,000 additional staff hours and over \$20 million to the investigation and response. The result is that priority repairs and upgrades will be completed before the start of summer 2000.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)
4. “Beginning in October 1998, in response to the extraordinary level of storm-related service interruptions experienced that year and a series of inquiries by the ICC and the Attorney General, ComEd accelerated its tree-trimming program and increases its three-year construction budget by \$300 million. Com Ed agreed to additional commitments in a May 1999 settlement with the City, bringing the total amount of committed reliability-related improvements in the City to \$1.1 billion. Furthermore, in discussions with the Legislature, ComEd committed to an additional \$2 billion in improvements to the system outside the City. (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)

5. “This unprecedented commitment of capital investment has now been boosted yet again. In response to the summer outages, ComEd has already accelerated and increased the resources devoted to improvements in the T&D system. Looking at the overall construction, operations and maintenance budget, ComEd expects to continue this expedited level of effort, spending \$100 million more than originally budgeted over the remainder of the year, and a total of more than \$1.5 billion over the next two years.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)
6. “The Report also details the recent improvements achieved through round-the-clock inspection, repair, and replacement activities, and offers a comprehensive blueprint and a definite timetable for the steps necessary to ensure that ComEd’s service meets or exceed industry standards in the performance it delivers to its customers.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)

PRIOR STATEMENTS ADDRESSING THE QUESTION OF SPENDING ADEQUACY BEFORE RECOVERY EFFORTS BEGAN

Here is what Liberty said in 2000:

1. ComEd’s goals and objectives for T&D were dominated by cost control and did not provide sufficient focus on customer service and reliability during most of the 1990s. (First Report, Page II-13)
2. Liberty found that during most of the 1990s ComEd exercised cost control and reduction policies that resulted in less than adequate funding for T&D. In fact, ComEd’s capital expenditures for T&D from 1991 through 1999 were less than ComEd budgeted for T&D by a cumulative amount of about \$225 million. In late 1998, in response to worsening T&D performance, ComEd announced additional capital expenditures of over \$300 million to improve T&D reliability. However, less than \$200 million of those additional funds were actually targeted at T&D reliability projects. (First Report, Page III-1)
3. In the 1991 five-year forecast, the T&D capital spending projection represented about 64 percent of the entire forecast. By 1997, T&D’s portion had dropped to 43 percent, as shown below. Although T&D’s portion of the capital forecast began an upward trend in 1998, it had still not reached 50 percent by 1999. (First Report, Page III-3)
4. Despite the fluctuations, most of the variances were negative, as shown in the graph below. T&D underspent its capital budget by a total of \$311 million from 1991-1999, and overspent by only \$86 million. Almost three-quarters of the over-expenditure amount, \$63 million, occurred in one year, 1999. This suggests either that T&D was unable to spend its allocation of ComEd’s total capital budget, or that capital dollars were reallocated after the budget was approved. (First Report, Page III-6)
5. During most of the 1990s ComEd exercised cost control and reduction policies that resulted

in less than adequate funding for T&D. During the period 1992 through 1998, ComEd's T&D capital and O&M expenditures declined. Moreover, especially with regard to capital, T&D received a diminishing share of a corporate budget that sometimes grew substantially. It is clear that this situation was not accidental. (First Report, Page III-15)

6. The low level of T&D funding was in fact the result of a conscious and concerted effort to reduce expenditures and maintain costs at a low level. (First Report, Page III-15)

7. ComEd placed emphasis on keeping costs low in the 1996 budget, as well. In guidance provided to T&D managers in September 1995, ComEd provided O&M and capital expenditure threshold targets that had apparently been updated (*i.e.*, lowered). ComEd advised business units of the need for the capability to exclude projects from their budgets with a dollar value of up to 10 percent of the business unit's capital budgeted dollars in the event additional reductions or reallocations needed to be made. (First Report, Page III-15)

8. Other evidence indicates that at times T&D bore the brunt of ComEd's cost control efforts. For instance, operation and maintenance expenses associated with ComEd's generating stations actually increased during the period 1994-96 by a total of \$140 million. The goal of this effort was to design and implement repairs and improvements to improve station availability. ComEd had actively embarked on a program to improve the quality of nuclear operations, which was also expected to achieve a longer term goal of improved availability and to position the company to take advantage of opportunities in the wholesale market for revenue generation. O&M expenses associated with T&D declined during this same period, reflecting cost control efforts. (First Report, Page III-15)

9. [T]here was a clear reduction of distribution maintenance expenses on a per-customer basis during the 1993 through 1995 period. Even as late as 1997, these expenditures did not reach the level that ComEd dedicated to distribution system maintenance in 1992. The sharp increase in 1998 was caused by the many outages that occurred that year. (First Report, Page IX-13)

10. ComEd cut back on maintenance expenses on a per customer basis during the 1993 to 1995 period. This contributed to the large backlog that existed in 1999. (First Report, Page IV-24)

11. ComEd allowed its distribution system to undergo a general degradation of its physical condition. The results of ComEd's own inspections showed that the distribution was in need of considerable repair. This finding is consistent with others observed by Liberty such as deferred maintenance and reduced personnel to perform work, mostly likely caused by reduced capital and maintenance expenditures. (First Report, Page X-11)

12. ComEd must not allow the physical condition of its distribution system to deteriorate to a condition like that which was discovered in the Fall of 1999. An improved and regular program of inspection and repair must be implemented. Similar to the recommendation above, ComEd must become more proactive and not wait until after a disaster to learn what kind of shape its

system is in. Improved preventive maintenance and systematic inspection programs with assured follow-up on the inspection findings should become a regular part of the T&D culture at ComEd. (First Report, Page X-13)

Here is what ComEd said internally at the time of the events and actions in question (Transformation Work Plan cites are quotes, cites to ComEd's audit data requests are not)

1. "Inside ComEd, the Transmission & Distribution (T&D) management shakeup came swiftly. The company quickly mobilized to expand and accelerate the implementation of \$1.5 billion in allocated improvements to the physical electrical system. Only an investment of this magnitude could adequately address the key processes that were missing or broken." (Transformation Work Plan Introduction – 1)
2. In the mid-1960s, things began to deteriorate such that, by the mid-1970s, ComEd's performance had begun to slip and the company suffered from low morale (for details, see *How We Got Here*). Company leaders were locked into a pattern of reacting to external demands, rather than pursuing a visionary direction. To make matters worse, a stringent austerity program came into play in the 1980s, due to the lack of rate relief (particularly hitting the T&D side of the company) to fund the enormous cost overruns and delays encountered in developing ComEd's nuclear capability." (Transformation Work Plan Introduction -5)
3. "The O&M and Capital spending in the Energy Delivery Company, as reflected above, is at an all-time high. This year's costs scenario is particularly unfavorable due to the fact that ComEd has now been forced to quickly make up for years of under-investment in the physical system. The external commitments made in 1999 were necessary, but very expensive." (Transformation Work Plan Where We Are - 25)
4. In a presentation to the board of directors in the immediate aftermath of the July and August 1999 outages, management said that investment plans did not effectively match spending with needs. (ComEd response to audit DR 393)

PRIOR STATEMENTS ADDRESSING THE QUESTION OF THE ADEQUACY OF COMED'S OPERATIONS AND MAINTENANCE PRACTICES BEFORE THE JULY AND AUGUST 1999 OUTAGES

Here is what Liberty said in 2000:

1. *Deferred Maintenance on Relays*: ComEd reduced significantly the number of relay packages maintained each year from a high of 4,500 in 1990 to approximately 1,200 in 1998. The number maintained in 1998 was less than 10 percent of all relay packages. As of July 1, 1999, the relay testing backlog was 2,433. ComEd indicated that other work interfered with relay testing in 1997 and 1998. In 1998, ComEd doubled the testing interval, thus reducing the frequency of relay testing, in the name of reliability-centered-maintenance. ComEd's testing of protection system relays was not consistent with good utility practices. Most utilities test and calibrate their distribution relays on a one- to five-year interval. (First Report, Page VII-19)

2.Failure to Apply Operations Criteria: ComEd had a maximum feeder segment criterion and maximum feeder length criterion to minimize customer outages. However, these criteria were not consistently applied to distribution circuits. (Recommendation Seven-4.)

3.Poor Maintenance Planning and Performance Information: [T]here was no one computer database system for tracking all distribution maintenance work, such as the Maximo software that was used for substation maintenance. The regional work planners and the T&D supervisors had to coordinate all distribution maintenance with distribution construction work and substation construction and maintenance work. This was a large undertaking for one T&D manager and superintendent in each region and not consistent with good utility practices. (First Report, Page IX-14)

4.Insufficient Cable Testing: ComEd did not perform maintenance tests to evaluate cables and did not always test cables after repairs had been made. Only recently did ComEd start performing diagnostic cable tests. Cable failures accounted for many of ComEd's interruptions. The need to perform diagnostic testing of cables to predict when they should be replaced was apparent. This matter is discussed in more detail in Chapter Eleven – Substations. (First Report, Page IX-18)

5.Insufficient Planning and Prioritization: In a 1992 report to the ICC, RMI recommended that ComEd should develop more detailed plans and budgets to prioritize maintenance work and should have a system-wide program for tracking backlogs. RMI warned that without such efforts, a “very large backlog of work” would develop. RMI also recommended that ComEd should analyze maintenance programs for their expected effect on reliability and determine the costs necessary so that these programs could be prioritized. Liberty found that ComEd's efforts to meet these recommendations were ineffective or nonexistent. (First Report, Page IX-18)

6.Inadequacy of Inspections and Assessment of Network Physical Condition: Liberty concluded that these inspection results showed that (a) ComEd's overhead distribution system was not in a good state of repair, and (b) ComEd's inspection of its overhead distribution system prior to the summer of 1999 had failed to assess the physical condition of the system. (First Report, Page X-9)

7.Inadequacy of Resources for Substation Maintenance: While aspects of ComEd's RCM program were superior, Liberty found other attributes of ComEd's maintenance program to be substandard. The ComEd substation maintenance programs lacked sufficient budgeting, supervision, or manpower such that maintenance tasks were not completed on a timely basis. Moreover, although both the older preventive maintenance program and the new RCM program indicated tests were to be performed on substation equipment, Liberty found no evidence to indicate that some of the insulation diagnostic tests were actually performed. (First Report, Page XI-19)

8. *Poor Substation Maintenance:* Although poor maintenance cannot account for all failures, these data suggest that considerable savings and improved reliability could have been attained with improved substation maintenance. (First Report, Page XI-22)

9. *Excessive Failure Rates:* On the basis of the Liberty team's experience, the number of circuit breaker and transformer failures during these periods were excessive. (First Report, Page XI-22)

10. *Inadequate Collection and Use of Operating Data:* ComEd did not have procedures to record and minimize transformer "loss-of-life." Monitoring, archiving, and analyzing winding temperatures and accumulated over-temperature conditions could have helped to predict transformer problems. The actual operating history of each transformer should have been compared with the assumptions made for the accepted transformer loss-of-life calculations, which may not exist. ComEd performed dissolved gas analyses (*DGA*) to determine when insulation damage had possibly occurred due to overloading. Although Liberty agrees that these tests provide valuable information to determine when loss-of-life has occurred, depending only on it to monitor loss-of-life was reactive rather than proactive. (First Report, Page XI-31)

11. *Inadequate Testing:* ComEd's maintenance program did not include sufficient diagnostic testing procedures, nor did ComEd have substation testing crews to perform the more complicated tests necessary as part of sound equipment maintenance. A nearby utility with fewer substations and half of ComEd's load, has 18 substation maintenance and testing crews, plus 11 more crews that specialized in performing insulation power-factor test. This utility used 11 power-factor test sets and 12 circuit breaker motion analyzers.^b ComEd has one of each. The test set and the systems shop electricians, who sometimes were not available when needed, performed the special testing work, usually for commissioning tests or problem solving. (First Report, Page XI-32)

12. A simple measure of a utility's maintenance performance is the number of maintenance items that are backlogged, or overdue for completion. In the summer of 1999, ComEd had 79,000 items back-logged from 1998 and earlier inspections. (First Report, Page IX-18)

13. Liberty found that ComEd's performance of distribution system maintenance was not consistent with good utility practices. Moreover, ComEd's practice of not testing cables was not good utility practice. (First Report, Page IX-18)

14. The number of backlogged items to repair (79,000 for overhead distribution) in summer 1999 was excessive and not a good utility practice. Delays in correcting defective items increases failure risks and reduces reliability. ComEd's policy was to complete maintenance items within 12 months. This policy was not followed. (First Report, Page IX-21)

b. Cinergy Corp, Plainfield IN and Cincinnati, OH.

15. In August 1999, ComEd had a backlog of about 5,200 substation corrective maintenance tasks and some 20,000 preventive maintenance tasks. Because of this backlog, the RCM program could not be effectively initiated. (First Report, Page XI-19)

16. ComEd's attempt to use an RCM program was consistent with good utility practices; however, ComEd's large maintenance backlog is not. (First Report, Page XI-19)

17. Substation maintenance was inadequate and not consistent with good utility practices. As of August 1999, over 25,000 substation maintenance tasks were overdue. This was likely due to (1) a lack of regional substation organizations including maintenance engineers, (2) reduced maintenance budgets, (3) use of ComEd mechanics on outside projects, and (4) not using qualified substation maintenance contractors. (First Report, Page XI-32)

Here is what ComEd said internally at the time of the events and actions in question
(Transformation Work Plan cites are quotes, cites to ComEd's audit data requests are not)

1. "ComEd has never pulled out of a reactive mode, and hence, has been imprisoned in a cycle of reaction, not quite at the bottom of the Change Curve, but close to it." (Transformation Work Plan Introduction – 5)

2. "Outdated systems, neglected equipment maintenance, poor planning and a prolonged absence of strong, engaged leadership brought the company to its knees." (Transformation Work Plan Where We Are – 3)

3. "In the report to the ICC, the company acknowledged its physical distribution system was in a serious state of disrepair. Faulty and aging equipment, poorly understood and outdated system designs and a lack of monitoring processes coupled with consistent system overloads had ultimately resulted in a fragile, unreliable system. The major findings of that investigation revealed serious issues in the T&D system, especially in the areas of system maintenance, planning and design and management." (Transformation Work Plan Where We Are -35)

4. The four physical system areas identified in the report and their corresponding inadequacies are outlined as follows: (Transformation Work Plan Where We Are - 37)

NOTE THAT BULLETS PRESENTED ARE EXCERPTS

Maintenance (Keeps the system in daily working order and identifies and prevents problems before they occur)

- Lack of rigorous care and maintenance T&D system requires for optimal reliability
- Poor work planning and execution, missed inspections, lack of focus, incomplete definition, historic budget swings and inconsistent supervision

5. The combination of continued poor maintenance and planning, poor design and the lack of a unified model had substantially increased the number and length of service interruptions. Reports concluded that the ComEd physical power distribution system, especially on its most

overloaded substations and feeders, was well outside design criteria from a risk standpoint. (Transformation Work Plan Where We Are - 38)

6. “In summary, today’s reality is not simply a result of the string of outages during the crisis of Summer 1999. Nor is it merely a function of physical system breakdowns. Today’s reality stems from a variety of actions the company has taken, failed to take, or experienced over the past 100+ years and, particularly during the last decade.” (Transformation Work Plan How We Got Here – 26)

7. In a presentation to the board of directors in the immediate aftermath of the July and August 1999 outages, management said that key substation facilities were in “poor” physical condition, inspection and maintenance had been inconsistently implemented, the corrective maintenance backlog was large, preventive maintenance was failing to solve problems, recent transformer failures were attributable to non-response to identified problems, and monitoring of system equipment conditions was not well developed or implemented. (ComEd response to audit DR 393)

8. With respect to underground facilities, the same presentation noted the discontinuance of preventive maintenance “several years ago,” a large corrective maintenance backlog, the failure to perform diagnostic tests, significant weaknesses in the inspection program, and frequent feeder failures, .(ComEd response to audit DR 393)

PRIOR STATEMENTS ADDRESSING THE QUESTION OF WHETHER COMED WAS PURSUING OUTSIDE WORK WHILE THIS BACKLOG OF INTERNAL WORK REMAINED

Here is what Liberty said in 2000:

1. ComEd pursued non-ComEd work, sometimes using its own electricians and engineers while distribution maintenance was backlogged. Even though ComEd was not restricted in the use of contractors, it did not use contractors to perform distribution inspections and maintenance other than for some particular tests, tree trimming, and pole treatment. (First Report, Page IX-18)

Here is what ComEd said internally at the time of the events and actions in question
(Transformation Work Plan cites are quotes, cites to ComEd’s audit data requests are not)

PRIOR STATEMENTS ADDRESSING THE QUESTION OF THE SUFFICIENCY OF COMED’S SYSTEM REINFORCEMENT EFFORTS PRIOR TO THE OUTAGES OF JULY AND AUGUST 1999

Here is what Liberty said in 2000

1. Liberty found that the engineering, construction, and material standards that ComEd used for its distribution system in prior years was consistent with other utility practices. However, ComEd did not have programs in place to identify and replace or refurbish equipment that had aged and had been overloaded such that its expected life had been reduced. Liberty also found that ComEd had allowed its distribution system to become heavily loaded and had not properly maintained

the physical condition of distribution equipment. Liberty's detailed conclusions and recommendations are in sections III and IV of this chapter. (First Report, Page X-1)

2. Several aspects of ComEd's distribution system planning contributed directly to the stress on the system in the mid- to late-1990s. As Liberty noted in Chapter Five of this report, ComEd did not adequately forecast the summer load and its policy of loading circuits to 90 to 100 percent left no margin for contingencies. ComEd did not have a formal method to identify circuits that had been overloaded, which would have allowed special testing, de-rating, or a reduction of load. Finally, Chapter Three reported that the T&D capital expenditures were reduced significantly in the mid-1990s. Without the expenditures to refurbish and replace equipment on a regular basis, system conditions will worsen due to age and electrical load. (First Report, Page-X2)

3. ComEd did not provide the exact data indicated in the standard that is used to determine when a transformer is overloaded. However, ComEd did provide transformer loading data, and, for the purposes of this evaluation, Liberty assumed that any transformer with a loading of 150 percent or more of nameplate rating would be at least suspect for an investigation of possible overloading. Using that assumption for the period of 1990 through 1998, ComEd had over 10,000 distribution transformers that exceeded 150 percent of nameplate rating. While this is only about 2 percent of all of ComEd's distribution transformers, there were many individual transformers that exceeded this amount for several years. (First Report, Page X-5)

4. The data supplied by ComEd also indicated that some transformers exceeded nameplate rating by several hundred percent. In fact, 431 transformers had loadings greater than 1,000 percent. Since actual loadings of this magnitude would cause catastrophic failures, and failure data did not indicate that transformers were failing in this manner and in the numbers indicated by the loading data, Liberty concluded that ComEd's method for tracking transformer load was not accurate. One reason for this may be that the LFM system sums peak loads for various customers on a transformer. If those peak-demands do not occur at the same time, actual loading will be less than the sum of the peak demands. Another reason may be inaccurate database information such as transformer size. Nevertheless, it is apparent that ComEd does not have reliable data to use in order to follow its own standard. (First Report, Page X-6)

5. The following table shows the ratio of actual load to the normal rating for three circuits in the Northwest substation. It shows that some circuits were considerably overloaded in several years before changes were made to reduce the load. (First Report, PageX-7)

6. ComEd did not have programs in place to identify and replace or refurbish equipment that had aged and had been overloaded such that its expected life had been reduced. (Pave X-11)

7. ComEd allowed its distribution system to become excessively loaded. ComEd's planning projected high loads on many circuits and did not accurately forecast distribution system loads. ComEd consistently projected loads on distribution circuits to be above 90 percent of the normal

rating. This did not allow for any contingencies like the failure in another circuit and the transfer of loads to an already heavily loaded circuit. (First Report, Page X-12)

8. ComEd's substation construction and upgrade planning was not adequate for providing reliable service. Needed substation upgrades at Northwest and LaSalle had not been executed in time to provide additional back up to equipment that failed in the summer of 1999. Construction and upgrading were not performed so that overload conditions would not occur. (First Report, Page XI-26)

9. ComEd could not justify the summer normal and emergency transformer ratings in terms of accepted loss-of-life. Therefore, the use of these ratings could have reduced transformer life to the point that system reliability was affected. (First Report, Page XI-31)

Here is what ComEd said internally at the time of the events and actions in question
(Transformation Work Plan cites are quotes, cites to ComEd's audit data requests are not)

1. "ComEd has never pulled out of a reactive mode, and hence, has been imprisoned in a cycle of reaction, **not quite at the bottom of the Change Curve, but close to it.**" (Transformation Work Plan Introduction – 5)

2. "**Outdated systems, neglected equipment maintenance, poor planning** and a prolonged absence of strong, engaged leadership brought the company to its knees." (Transformation Work Plan Where We Are – 3)

3. "In addition, the **distribution system lacks certain design features that increase reliability – particularly, redundancy.**" (Transformation Work Plan Where We Are -34)

4. "In the report **to the ICC, the company acknowledged its physical distribution system was in a serious state of disrepair. Faulty and aging equipment, poorly understood and outdated system designs and a lack of monitoring processes coupled with consistent system overloads had ultimately resulted in a fragile, unreliable system. The major findings of that investigation revealed serious issues in the T&D system, especially in the areas of system maintenance, planning and design and management.**" (Transformation Work Plan Where We Are -35)

5. "The four physical system areas identified in the report and their corresponding inadequacies are outlined as follows: (Transformation Work Plan Where We Are - 37)

NOTE THAT BULLETS PRESENTED ARE EXCERPTS

T&D Load and Capacity (Helps ComEd ensure it is equipped to carry loads, especially during peak periods of demand

- **10 percent system shortage of being capable of handling predicted peak loads (both substations & feeders)**
- **Inability to deliver reliable service to customers during peak times**

System Optimization (Permits ComEd to deliver power in the most efficient and reliable manner possible; is the most difficult area to address

- Insufficient system capacity and configuration redundancy
- Reliability suffering due to the shortage of the power delivery capacity required, allowing for operational flexibility & contingency mgmt.

6. The combination of continued poor maintenance and planning, poor design and the lack of a unified model had substantially increased the number and length of service interruptions. Reports concluded that the ComEd physical power distribution system, especially on its most overloaded substations and feeders, was well outside design criteria from a risk standpoint.” (Transformation Work Plan Where We Are - 38)

7. In summary, today’s reality is not simply a result of the string of outages during the crisis of Summer 1999. Nor is it merely a function of physical system breakdowns. Today’s reality stems from a variety of actions the company has taken, failed to take, or experienced over the past 100+ years and, particularly during the last decade.” (Transformation Work Plan How We Got Here – 26)

8. In a presentation to the board of directors in the immediate aftermath of the July and August 1999 outages, management said that distribution planning failed to adequately address peak load or track load growth on distribution circuits. Management observed that large numbers of substations exceeded their emergency ratings under first contingencies. Management was also critical of system design, saying that there were weaknesses in forecasting and in analyzing load, deficiencies in system design criteria and assumptions. Management specifically criticized the system’s radial design, noting that it created inherent vulnerability for which there was no compensation, and that improvement plans would retain the same “basic weakness.” (ComEd response to Audit DR 393)

PRIOR STATEMENTS ADDRESSING THE QUESTION OF HOW EFFECTIVE AND EFFICIENT COMED WAS IN WORK PLANNING AND PERFORMANCE

Here is what Liberty said in 2000:

1. The relatively large number of changes in structure, responsibilities, and reporting relationships in the T&D organization caused inefficiency and created confusion throughout most of the 1990s. (First Report, Page II-9)

2. The establishment of the interim organization following the July and August 1999 outages was a firm and positive step toward recovery from what appears to be years of confusion and disorientation in T&D Operations. ComEd’s September 15, 1999 Transmission and Distribution Investigative Report laid the groundwork for improvements that must be made regarding the organization and structure of T&D. (First Report Page II-16)

Here is what ComEd said internally at the time of the events and actions in question (Transformation Work Plan cites are quotes, cites to ComEd’s audit data requests are not)

1. “ComEd operates from a Reactive Business Model that is driven by crisis. This model precludes any form of proactive action, thinking or learning. Within this Reactive Business Model, a crisis, or urgent event, will always displace the valued or the important. Consequently, there never seems to be enough time for planning, establishing operating systems (financial systems, strategy, business planning), developing people or effectively completing the implementation of programs because “the crisis” always takes precedence.” (Transformation Work Plan Introduction – 6).

2. “A snapshot of ComEd’s current performance can best be summarized as follows:” (Transformation Work Plan Where We Are -2)

NOTE: LIBERTY TRANSLATED VISUAL SYMBOLS DEPICTING CATEGORIES OF “POOR,” “FAIR,” “GOOD,” AND “EXCELLENT”

Performance Category	Yesterday (8/99)	Today (10/00)	Tomorrow (2003)
Cost Effectiveness	Poor	Poor	Good
Productivity	Poor	Poor	Good

3. “At present, the ComEd Energy Delivery Company performs poorly when it comes to cost effectiveness. Analyses indicate an average cost gap in the neighborhood of 25 percent between ComEd and other electric utilities, weighted for size and other relevant factors. Much of this discrepancy can be attributed to a lack of awareness and an inattention to costs.” (Transformation Work Plan Where We Are – 22)

4. “ComEd managers often lack good information about how much various activities cost the company to perform.” (Transformation Work Plan Where We Are – 23)

5. “In addition, reconciling projected costs with actual costs has been missed.” (Transformation Work Plan Where We Are -23)

6. “When [the new senior executive in charge of T&D] joined the company, he experienced senior people coming into his office who could not clearly articulate their budgets or describe their responsibilities. Operating and capital budgets have been essentially thrown together every year. From the top of the organization to the bottom, budgets have been regularly missed and forecasts proven inaccurate, all without substantial consequences. Even not, the company expects to not achieve it 2000 budget.” (Transformation Work Plan Where We Are -23)

7. “One of the biggest deterrents to meeting budgets has been the lack of adequate work planning. Budgets have been compiled without a clear account of how much work needs to be done by when. Not surprisingly, the budgeted amounts are often not borne out during the course of the year. This has impacted the effectiveness of the huge amounts spent on system improvement over the last 2 years as well.” (Transformation Work Plan Where We Are - 25)

8. Following are excerpts from meeting with the board of directors, showing timelines for dealing with project management and costs effectiveness issues (Transformation Work Plan Where We Are - 51)

Quarter 1, 2000 – Get out of Jail

- Start building internal capability

- Financial Systems
- Project Management
- Measurement
- Accountability

Quarter 2, 2000 – Get it Done...Now/Establish Expectations

- Work internal capability

Quarter 3, 2000 – Make it Through the Summer

- Focus on cost effectiveness

Quarter 4, 2000 – Bringing it all Together

- Internal capability

- Cost effectiveness

9. In a presentation to the board of directors in the immediate aftermath of the July and August 1999 outages, management said that key capabilities in information systems, work management, decision making tools, and business acumen “do not exist.” (ComEd response to audit DR 393)

10. In that same August 1999 presentation to the board, management acknowledged the unsettling effects of multiple reorganizations through the 1990s and the lack of clear responsibility and accountability for performance. (ComEd response to audit DR 393)

11. Executive Management’s Report to the board in April of 2001, summarizing 2000: poor 6-pack project definition, lack of costs estimating standards, failure to approve a capital budget till June, lack of a competent cost reporting system, no effective work management process or organization, 300 fast-track projects, 8% overrun on centrally managed projects, 36% on regional ones, cumulative overrun exceeding \$100mm (DR 472)

Here is what ComEd said publicly at the time:

1. “Within 90 days, ComEd will submit to the ICC a comprehensive System Optimization Study that is intended to map out the changes needed to re-tool the system to meet service demands in the next century.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)

2. “The enclosed report is pegged to an accelerated schedule in which priority improvements will be completed soon (many of the projects are scheduled for completion within 90 days), and in which all priority work will be complete before the start of next summer.” (9/15/99 Letter of ComEd Chairman and CEO to ICC Executive Director)